

Marks et al.
May 12, 2004

Page 2

In the Claims:

Please cancel claim 4. Please amend claims 21 and 28. A detailed listing of the claims is provided, below.

1. (Original) A method of using silyl chemistry to control the reactivity of a self-assembled molecular electro-optic material, said method comprising:
providing an electro-optic material comprising a silyl-derivatized chromophore;
desilylating said chromophore compound to generate terminal hydroxy functionalities; and
reacting said hydroxy functionalities with a reagent having at least one silicon moiety.
 2. (Original) The method of Claim 1 wherein said chromophore is a high- β chromophore.
 3. (Original) The method of Claim 1 wherein said chromophore is derivatized with a trialkylsilyl protecting group.
 4. (Canceled)
 5. (Original) The method of Claim 1 wherein said chromophore is desilylated by treatment with a deprotecting agent.
 6. (Original) The method of Claim 1 wherein said chromophore is derivatized with a *tert*-butyldimethylsilyl protecting group.
 7. (Original) The method of Claim 6 wherein said chromophore compound is desilylated with a quaternary ammonium fluoride.
- Claims 8-20 (canceled).
21. (Currently Amended) A non-linear optical material comprising a plurality of molecular bilayers, each said bilayer comprising a first chromophore molecular layer coupled to a capping molecular layer with a siloxane bond

Marks et al.
May 12, 2004

Page 3

sequence, said capping ~~compound~~ molecular layer ~~capable of coupling directly~~
coupled to another chromophore molecular layer with a siloxane bond sequence.

22. (Original) The material of Claim 21 wherein said chromophore is a high- β chromophore.

23. (Original) The material of Claim 21 wherein said capping layer is a polysiloxane.

24. (Original) The material of Claim 23 wherein said capping layer comprises octachlorosiloxane.

25. (Original) The material of Claim 21 wherein said bilayers are deposited on a substrate.

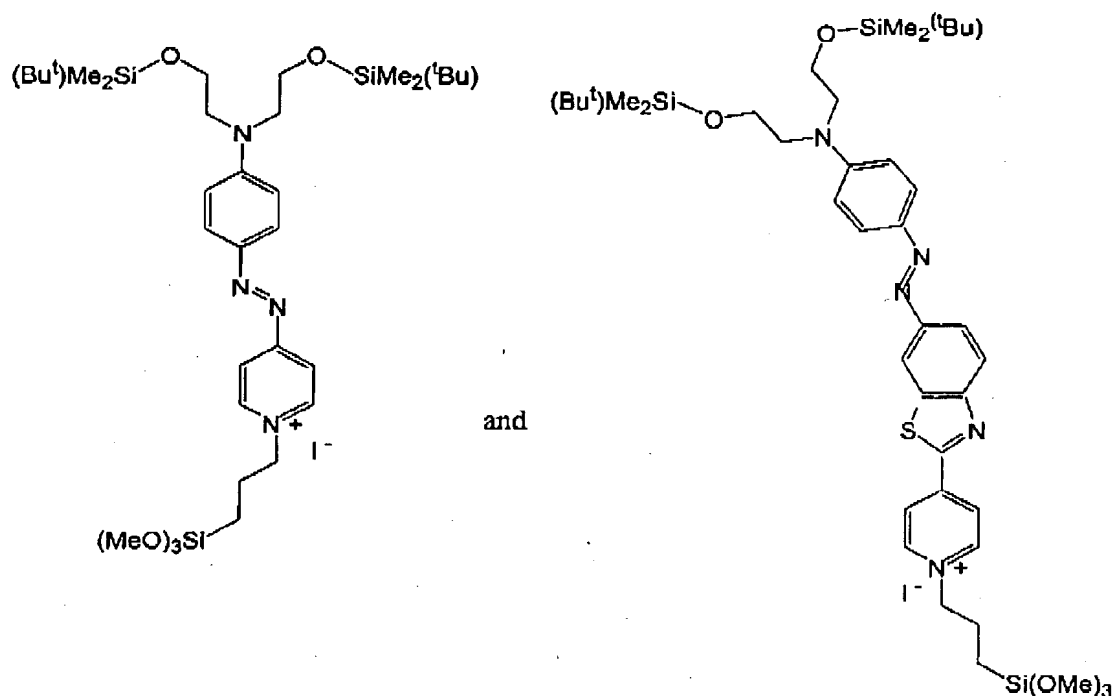
26. (Original) The material of Claim 25 wherein said substrate and said bilayers are incorporated into a waveguide device.

27. (Previously Amended) A chromophore composition with non-linear optical properties having the structural formula $(\text{Ch})\text{XR}_n$, wherein $(\text{Ch})\text{X}$ comprises a pyridinium chromophore substructure and X is a heteroatom; R is a trialkylsiloxyalkyl moiety; and n is the number of said moieties meeting the valence requirement of said heteroatom.

28. (Currently Amended) The composition of Claim 27 wherein said chromophore is selected from the group consisting of ~~structural formulae shown in FIGS. 2, 11 and 15,~~

Marks et al.
May 12, 2004

Page 4



29. (Original) The composition of Claim 27 where in X is selected from the group of heteroatoms consisting of O and N.

30. (Original) The composition of Claim 29 wherein X is N and n is 2.

31. (Original) The composition of Claim 27 comprising a non-linear optical film.